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0 10 20 30 40 50 60 70 80 90 100 Miles

**SOUTH POLAR REGION - SHOWING ROUTES OF THE PROPOSED ANTARCTIC EXPEDITIONS**

# THE National Geographic Magazine

VOL. X

AUGUST, 1896

No. 8

## SHISHALDIN AS A FIELD FOR EXPLORATION

By JOSEPH STANLEY-BROWN

The areas within the boundaries of the United States yet untrod by the geologist or explorer are rapidly becoming fewer and fewer, while fields offering unique features of interest to either class of investigators are indeed rare. Even Alaska, formerly deemed, is now much in evidence, and is being traversed by private and governmental exploring parties to an extent which promises soon to gridiron that northern wilderness with rail routes and traveled trails, while from the systematic work being carried on by means of river, land, and sea we may expect at no distant day far more satisfactory geologic and topographic maps of the territory's vast and previously little known interior than have heretofore existed. Leaving these broader areas to those having special reasons and ample financial resources for surmounting the great obstacles they offer, attention is asked to a limited field of exploration which for compactness, accessibility, economy of effort and expense, and probable richness of returns stands unrivaled today within our borders.

The route from Sitka to Unalaska has been one of continuous travel by sea-going vessels for many years. While making this journey hundreds of voyagers have looked on and exclaimed over the majestic beauty of Mt Shishaldin, but so far no known no white man's foot has yet trod the higher slopes of this splendid cone, which rears its snow-clad crest nearly 9,000 feet above the adjacent sea.\* The eastern half of Unimak island is occu-

\*Professor Flower's claim that he ascended Shishaldin is untenable, being evidently based on a misunderstanding of the name of the mountain he climbed. The ascent could not have been made in the limited time in which he states it was done.



plied by it and the associated peaks. This island, some 70 miles long, with an average width of 15 or 20 miles, crowded with extinct volcanoes and separated only by a shallow pass from the Alaskan peninsula, is the first member of the Aleutian archipelago—that chain of submerged mountains which with its prolongation, the Commander islands, sweeps from continent to continent, describing across the North Pacific ocean an arc of more than a thousand miles.

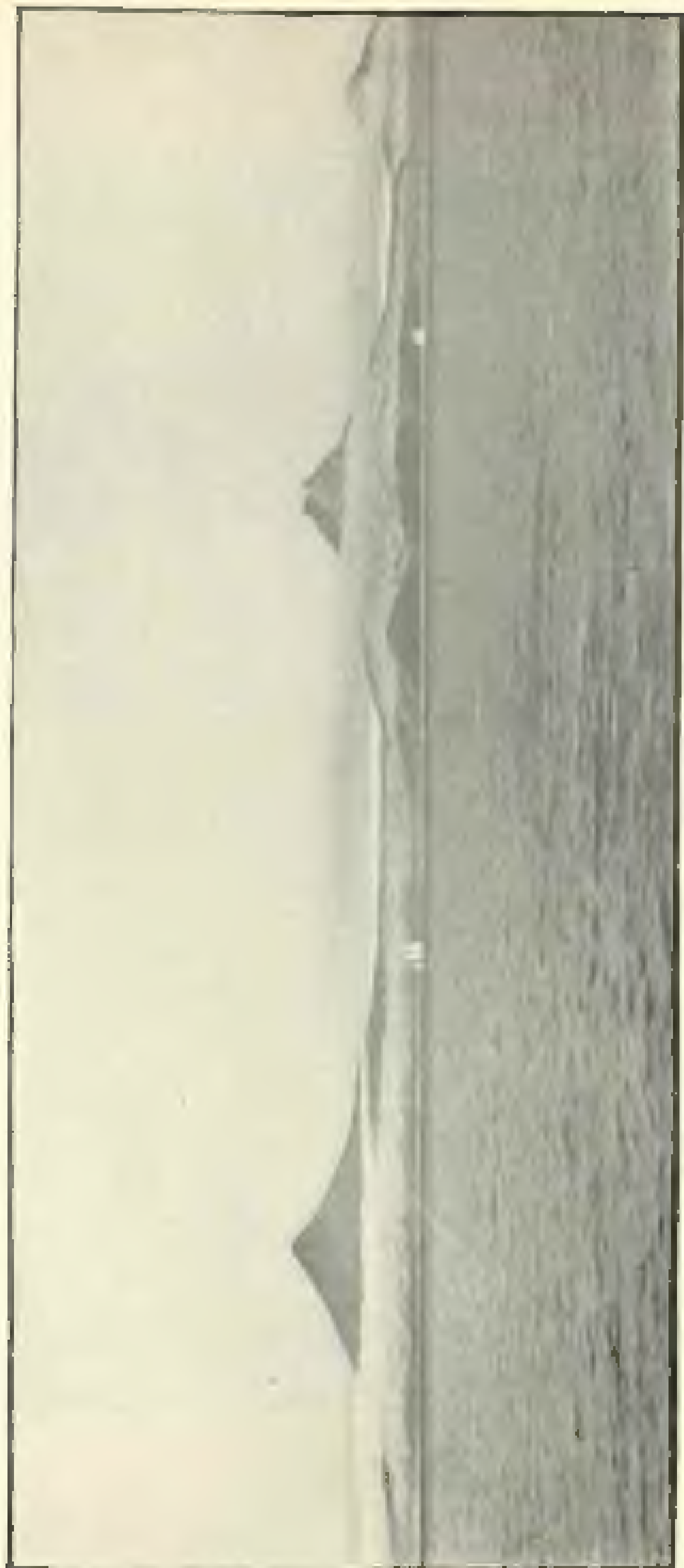
Shishaldin is undoubtedly still an active volcano, but how active cannot be accurately known until some explorer stands on its summit. There are recent stories by some who claim to have seen flame-colored vapors rising from it, and by others who assert they saw columns of smoke ascending. In 1897 I saw



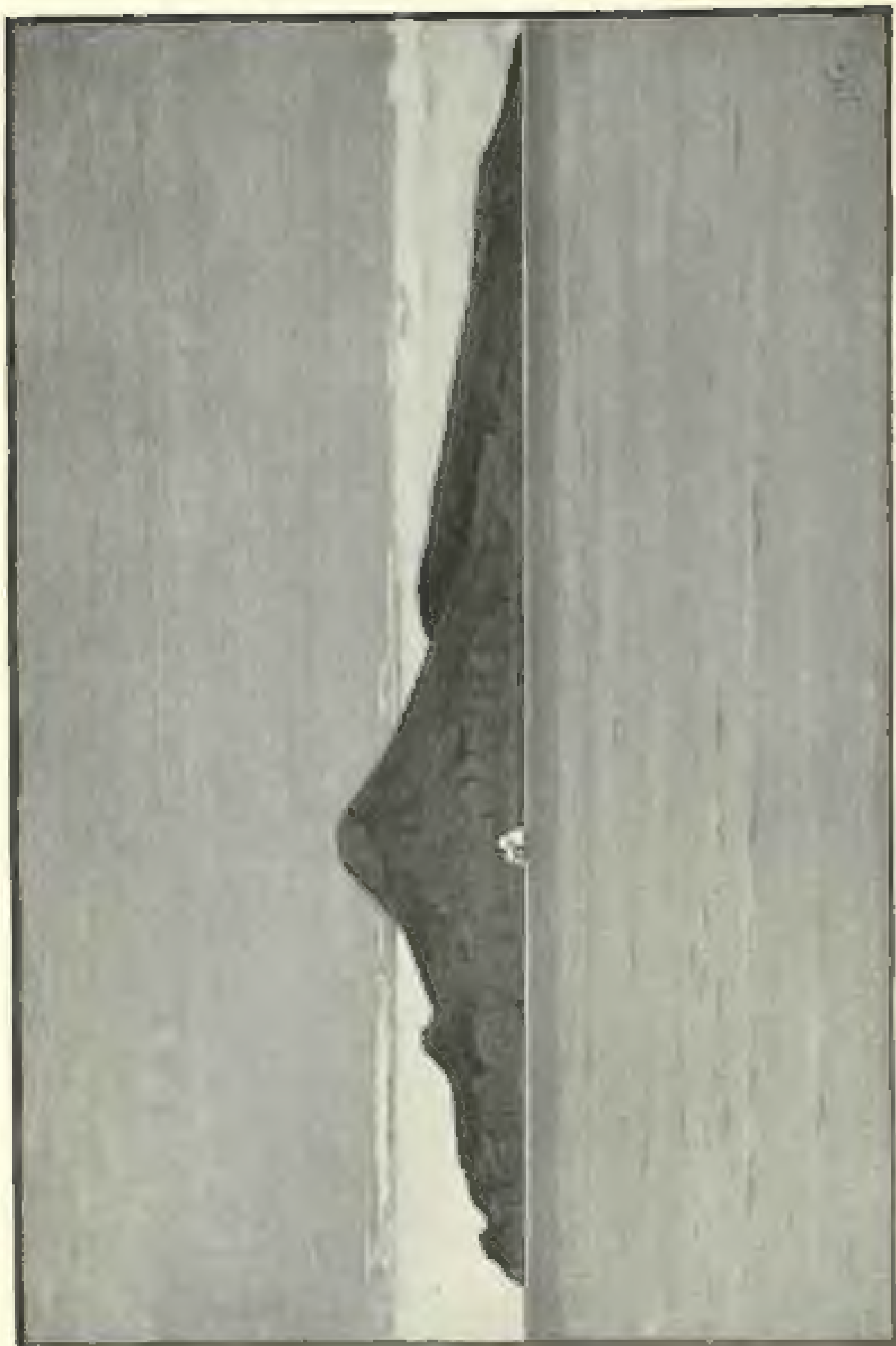
FIGURE 10. BERING SEA.

Showing field of exploration and suggested field of exploration.

what appeared to be banners of steam issuing from it, but fogs are frequent here and snow carried by the winds about the peaks of mountains of high altitudes play deceitful pranks. There are two very intelligent and well-to-do traders (Charles Rosenberg and Charles Swanson) who live with their families at Morshovia village, near the base of the mountain. While on a trip in their schooner to Dutch Harbor, Unalaska bay, last summer for supplies they told me that the volcano is now in a state of eruption, and that at night they had seen, high on the slopes, tongues of molten lava creeping slowly down the mountain side and branching around obstacles lying in their course, thus leaving islands between the fiery streaming. They asserted also that ashes are ejected from the crater, and that on hunting trips they had ascended far enough to detect the heat and recognize the sulphurous fumes.



FLAT DESERT AND MOUNTAIN RANGE





The determination of the real conditions is an inviting task. It will probably be found that Shishaldin is a gigantic cinder cone, one of the largest in the world, and of a symmetry equaling, if not surpassing, that of Fuji-yama. The accompanying reproduced photographs show not only the wonderful regularity and beauty of this cone, but also that it has a neighbor apparently its equal in magnitude and probably the true volcano as well as the elder of the two. The relationship may be similar to that existing between Lassen peak and the Black Butte cinder cone. As seen from a distance there appears to have been a lava discharge from the side of Shishaldin which cut a huge gash, while the castellated character of the adjacent peak suggests a well-formed crater with rock walls. The view of this most interesting mountain mass as given in the illustration must be interpreted with caution, for the apparent uniformity in the size of the two peaks may be due to varying distances from the camera, which was on the deck of a vessel at least 10 miles from the shore.

Unimak Island alone, with the story of volcanism it has to tell, is well worth a summer's work, but near by within a circle of a hundred miles' radius there are other volcanoes with more or less residual life, which, with Shishaldin, form a group so favorably situated for exploration that its systematic study could be accomplished without great expense and in a short field season. Pogrinnod, on the western end of Unimak, is extinct, but on Akutan, the next island, there is an active volcano of the same name. One unusually favorable day in August, 1892, Mr Charles H. Townsend, of the United States Fish Commission, and I climbed one of the peaks of Unalaska bay, which brought Akutan in full view. To our great surprise, we saw gigantic rings of smoke, such as sometimes come in miniature from the smokestacks of locomotives, issuing from the crater at regular intervals of about twenty minutes. As each succeeding ring appeared, its predecessor was slowly breaking up and fading away in the air. Four such rings were seen, but how long the display lasted it was not possible to determine, as the peak became obscured in drifting banners of fog.

On Unalaska Island is the huge volcanic mass of Makushin, between 5000 and 6000 feet high. From the reports of those who have ascended Makushin, it would seem that fumarole action is all that is left of its plutonic fires; but earthquakes, some of decided vigor, are annually felt in the locality, while the many adjacent cinder cones and craters testify to the activity of other days.

Some 40 or 50 miles from Unalaska in a north of west direction are the two tiny dots of rock which compose Bogoslov (Jokama Bogoslava), whose origin was within historic time and whose form has undergone changes quite recently. Columns of steam steadily rise from one of the mounds, and here the warm earth temperature is now utilized, as some one has judiciously suggested, to assist in the hatching of the eggs of the myriads of gull-larvæ which, in company with a colony of sea-hens, occupy these volcanic summits. The other member of the group, connected with its neighbor by a low-lying strip of sand, is without heat.

Suggestions concerning the exploration of these areas would be incomplete without reference to methods of reaching them. A mail boat now makes a monthly trip from Sitka to Unalaska. This boat is under the control of the Pacific Steam Whaling Company, a corporation which would willingly extend a helping hand to such work. It would not be difficult to get this vessel to stop at the village of Marshovia, past which it goes, where could be readily secured the services of such men as Rosenberg and Swanson, who own a hunting cabin at the base of Shishaldin and have boats and suitable equipments for transportation. They could also obtain from among their Indian friends the necessary packers. The approach would have to be made from the Pacific side, as here the ground is high, barren, and rolling, while on the Bering Sea side there are lakes and swamps which would make travel difficult if not impossible.

From Marshovia the mail steamer on its next monthly trip could move the party to Unalaska bay, where are located the comfortable stations of the North American Commercial Company and the Alaska Commercial Company, both of which corporations would doubtless render all possible assistance to such an expedition. Here also the aid of a revenue cutter or that of a small schooner could be secured to make the short trips to Akutan and Bogoslov. The Revenue Cutter Service has won a high place for itself in the field of travel and of exploration, and is always in sympathy with such matters. At Akutan, some twenty or thirty miles from Unalaska, there is an Indian village within a beautiful land-locked harbor. Here the party could be left for ten days or two weeks, guides and packers secured from the Indian village, and the ascent and exploration of the volcano of Akutan readily accomplished. Bogoslov could be explored in a round trip of two days or possibly less from Unalaska, if the conditions for landing were favorable. Using the summer-



and company's stations as a case of supplies and assistance to a party of Makah Indians. It is to be paid for a few days, and that a thorough investigation will not take up four days.

Dr. Huxley's work in Alaska has presented a very interesting and instructive chronology to that one of the activities of the Government. It is a very interesting fact that there has been great diminution of energy with the passage of time, and a system of expenditures in a study of these volcanoes, as well as the geologically connected areas and well as the other things of geographical interest. A nation, or those who can contribute to the study of the money, and not the wealth, need to be taken into account of the study, as well as the fact that the government is to be taken into account in the study of the study.

## MAGNETIC WORK OF THE COAST AND GEODETIC SURVEY

By L. A. HUXLEY

*Chief of Bureau of Geodesy and Magnetism*

From the date of the organization of the Coast Survey the supply of magnetic data to the land surveyors and the other work has been a constant and increasing one. And every year a demand for such data has become more and more pressing, so that the present superintendent, Dr. Henry S. Pritchett, has found it necessary to form a new division for magnetic work. It is with that division we seek to carry out one of the largest of our duties, and may be briefly classified as follows:

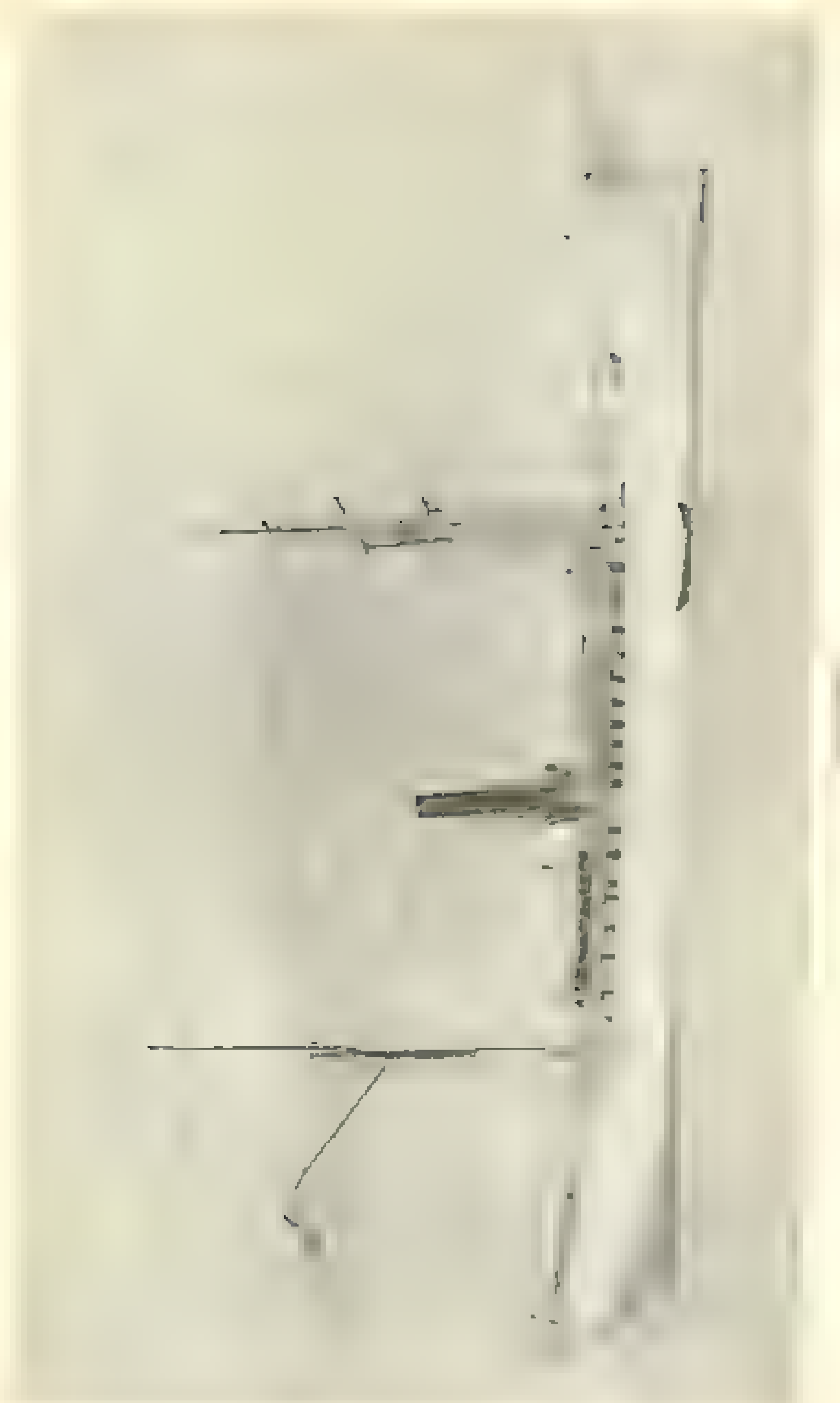
I. *Magnetic Survey of Land Areas under the Jurisdiction of the United States.* The three elements, magnetic declination, or variation of compass, magnetic inclination, or dip, and intensity of the magnetic force, were determined at stations over the large part of our country in 1882. As the land area will be to a great extent added stations per annum, it is estimated that the complete survey of the country will take about ten years. The short-period variations are determined on a part of the magnetic declination, which were observed with the aid of the observatory, and are all by direct observation, and are the

\* In 1882, the magnetic declination was 10° 10' E.

results of a series of variations will be made with the aim of ascertaining frequency at various intervals as described "repeat" a series of variations. The survey, however, is now carried along with the various state geologists in the carrying out of the state magnetic surveys. The work is extended to cover the entire state, of topographical interest for the use of the surveyor and in the detection and mapping of great quantities of disturbances and the correlation of the latter with geological formation.

2. In our *Self-Confidence* record, Washington places in the compass pages a list of navigational points with the remarks "no land over 4000 ft. has been reached by systematic work" (1900 information) and "no reliable observations" (1901). Young and Passeloup, using on its charts the survey of 1898 as a basis for need of more accurate data. It is a well known fact that at many places near coast lines and over a marginal land area—where change from deep water is rapid and bottom processes are taken from a present state of things of "equal to greater current" is the weakest. At these places these lines will present the same period of resources and a perhaps longer and over the sea area. The Survey therefore, requires in conducting its work, more accurate land data, as these details are making maps to provide for carrying on such work systematically in the future. Its work will be of a twofold character.

- [illegible]







waters. There is no scientific investigation has been carried on. The Society Island will be first visited and hence the vessel will touch at the Marshall Islands first. Between San Francisco and Tacoma a distance of 3,500 miles, dredging and searching will be carried out at regular intervals on a section of the seabottom which was unexplored. This will be the headquarters of the Society Islands and the Phoenix Islands are being organized for the latter and perhaps other islands at intervals of six or eight weeks will be visited and important sections of the discovery should be made. In the Tonga or Friendly Islands, located about 1,000 miles from the Society Islands, a week or ten days will be passed. The vessel will then proceed to the Phoenix Islands, where a short stay will be made and then

return to the Marshall Islands, it will be interesting and profitable to study the natural history almost nothing is known except a few weeks will be devoted to exploration. The Phoenix Islands are lying between the Fiji and Marshall Islands will also be visited. It was originally the intent not to leave the Phoenix Islands from the Marshall Islands to the Hawaiian Islands and thence to San Francisco, running a line of inspection along the coast to Honolulu, but, owing to the prevalence of head winds at the time when the vessel will be ready to leave the Phoenix Islands, this plan has been abandoned, and instead the vessel will sail for Japan, making frequent use of the dredge and the deep-sea tow net and setting the trawl in the most lately deep water off the Japan coast, where the fishery are constantly bringing up catches of fish. The voyage of nearly 20,000 miles will come to an end at Yokohama where the *Albatross* will arrive in April, 1900, and reflect a summer cruise to Alaska to resume the systematic examination of the seabottoms between every 3 days and

The sailing features of the expedition will be a new dredging trawl, a new tow net, and some new and improved fishing gear. A new dredge-rope of 100 fathoms long has been made in order and to secure a suitable gear for many years a special form has now to be prepared. It is expected that both the dredge and the tow net will be used in deeper water than heretofore. One of the new pieces of equipment is a beam trawl of improved middle size size especially designed for the capture of larger animals than can be taken with the usual apparatus. Without results any other use can only be conjectured. The new trawl network is

The net was 100 feet long and  
 10 feet high, and was set by a 200  
 foot beam, with a line at top  
 with a series of 2 feet square  
 floats at 10 foot intervals.  
 The size of the net was  
 not related to the frame as a  
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 mesh; a frame shaped throat  
 is attached 7 feet back from  
 the beam. The mouth of  
 the trawl is twice the size of  
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fishery expert and Mr L. G. Pascoe, a biologist, got a lot of fish from the sea.

Typically, 15-20 fish are collected, plus different types of species, such as a number of species of sea cucumbers, squids, crabs, mollusks, etc., and the region is so extensive. Advantages will be taking of every other specimen for the N. I. and Museum specimens of the common fish, insects and other biological materials of the various islands visited. A survey of the all regional fish, insects, mollusks, squids, etc., will be taken, and to cover a lot of specimens of the native fishing appliances will be collected. If the necessary expense

The Smithsonian Institution and especially requested that the first Commission make an effort to trace the origin of some of the other negro specimens sent back from the Pacific Islands by the Wilkes Exploring Expedition. Owing to the unfortunate circumstance that the collection made since 1843 during early years of my life had been lost and the articles it is composed of practically worthless. I regret that no account was made of such specimens and the lament of the Smithsonian is justly borne by the hope that is about me that I might do something about them. I have now nearly 200 specimens, the majority of which were sent in for the National Museum articles I list at the end of my collection of the full list of these material objects, which are ready

As to the use of civilized people, directed at the workers has reached the same level as that of the savage and even attraction of the vessel will be given special instructions to be a live lookout (it doesn't need great control)

In regard to the movements of the vessel, the speaker said he visited, only the day before, the Department of State was, through our ambassador, making the British, French, and German authorities of the approaching cruise and asked that tariff and other regulations be waived.

There is every reason to believe that that expedition will yield a goodly amount of the results and will be profitable to the

It promises to be by far the most important occasion on which the Fish Commission are expected and

one of the most perfect and profitable enterprises in which the government has ever engaged. It is a matter of congratulation

by the British, German, French, Dutch and Norwegian vernaculars the United States will participate under such favorable auspices and be represented by a series of men with experience in deep-sea investigation as Professor Agassiz.

## GEOGRAPHICAL CONGRESS AT BERLIN

The delegates of the National Geographic Society to the Seventh International Geographical Congress, which will be held at Berlin from Thursday, September 28 to Wednesday, October 4, under the auspices of "die Gesellschaft für Erdkunde in Deutschland," are as follows: Dr. Alexander Graham Bell, President of the Society; Dr. A. W. Carey, U. S. A., also designated by President McKinley to represent the United States government; Hon. Arthur D. White, U. S. Ambassador to Germany; Prof. William

Meteorologist of the Weather Bureau; Miss Elizabeth A. S. Smith, Secretary of the Society; Mr. Marcus Baker, of the U. S. Geological Survey; Dr. L. A. Barker, of the U. S. Coast and Geodetic Survey; and Prof. Wm. M. Davis, of Harvard

University. Explorations will occupy the most prominent place in the demonstrations, for Captain Krygalski and Dr. Neumayer and other eminent men will soon be returning to the continent to report on the results of their

explorations in the autumn of 1871. Prof. Penck, of Berlin, will read the discussion of our proposed trip of the world's circuit of 1873-74, which at the last Congress in London, 1870, was referred to a committee for report at the meeting. In the section of physical geography Prof. Wm. M. Davis will contribute a paper on "The Geographical Cycle," and also on "Our Land Surfaces," to the said Prof. Dr. Wm. M. Davis, under the head of political geography, will discuss "National Government in different parts of the World." Other papers will be presented by Prof. Supean, Sir John Murray, Prof. Wagner, Dr. Ernst Haeckel, the Prince of Monaco, Dr. Schimper and Miss L. A. Owen, of New York, Mo. The committee in charge of the Congress have arranged for a delightful series of excursions to points of geographic interest within a day's reach of Berlin.



## THE PROPOSED AMERICAN INTEROCEANIC CANAL AND ITS COMMERCIAL ASPECTS

by JOHN A. MANN, JR., LL.D.

The question as to the propriety of a canal to Nicaragua or to Panama related respectably to upon three classes of considerations, viz., those relating to its engineering and to its economic, political and social, those relating to its commercial possibilities and those relating to its probable history in operation.

The government of the United States has done for nearly its entire history almost exclusively to the engineering features of a canal project. It has in the last four years alone been dealing with various cases have been reported yet the "Canal now can discuss

and" is reported by word of June 4, 1897, and a comparison of the proposals submitted since March 1, 1896 and approved by the President June 9, 1896. Rear Admiral Walker is an champion of the canal route. There was approved a plan for the canal route in 1870, but the money of 1897 the amount of \$10,000,000 and in 1898 the sum of \$1,000,000, but the amount was the sum of \$1,000,000. The canal route is proposed with a view to the purpose of ascertaining the engineering features and the cost of constructing the American canal route, but it is proposed to build a canal route to be built by Congress for the purpose of ascertaining the engineering features and the cost of constructing the American canal route.

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submitted to Congress, in connection with the reports of examinations and surveys of rivers and harbors heretofore made to Congress, the statements of all existing facts bearing on how far we extend the general commerce of the country will be promoted by the several works of improvement contemplated by authorized surveys." But, in the face of this proclamation of our heretofore asserted right to examine freely and in connection with our own interests the projects of the Nicaragua Canal, Congress and out of Congress have for years been urging the government to lend them the half-million dollars for the construction of a canal through our country, more than one thousand miles from our shores without any other authority whatsoever as to its possible value or value.

In his book entitled "The Nicaragua Canal and the American Issue" Professor Henry Jones says: "When we read the various reports to study the commercial effects of the canal." The Hon. Thomas L. Reed, in a report on the American Review for May, 1895, in referring to the proposed canal which would pass through the Nicaragua Canal, says: "It would seem, therefore, that after the passage of the act is such a measure perhaps while it is being debated and a fair amount of comparative progress, in reference, should be made to study the project of the subject. We are then, as equipped with the necessary facts to enable us to judge of the comparative merits of the two canals."

Next the case of the Isthmian Canal the fact seems to have been set upon the minds of certain Senators and members of the House at the recommendation, they should investigate and make a proposition for the construction of the canal, but the act of March 3, 1899, appropriating one hundred thousand dollars for the examination of both the Nicaragua and the Panama routes, refers only to the engineering the proprietary and the financial features of these schemes, and it contains not a word as to their commercial, economic or military aspects. Action has, however, been taken whereby a committee of three of the members of the House has been appointed to study of a report upon these matters for the report of the subject. This is not in terms authorized lawfully, it appears to be the beginning of an inquiry or deepest respect to the people of the United States.

It is the object of this paper to present some of the more important geographical, commercial, and economic considerations which



the United States should not be permitted to pass in order to obtain the cost of a shorter communication to the American continent on account of the enormous projected cost of that part of the canal.

It is a maxim by the proponents of the two American inter-oceanic canal projects that the commerce of the Pacific Coast states of the United States with that part of our country which lies east of the Rocky mountains will afford a large amount of traffic for either of the proposed canals. This may be a part of the general geographical consideration of the subject, but it is not a fact. The population of the United States resides west of the Appalachian range. The population commerce of the Pacific Coast states is a wide land portion of the country which lies west of the coast and east of the Rocky Mountain range. The commerce at all points of population and existing between the West Coast states to all points of production and consumption in the area between the Rocky Mountain range and the Appalachian range by direct rail lines is only about one third the averaged surface distance, such points by the Nicaragua or Panama route. Besides, the direct rail route is generally superior to the water route with respect to speed, and it is for the collection and distribution of freight, and the production of those bulky elements of cargo which would be necessary in the case of goods shipped by a canal route. The route is true as to a direct distance of all sorts of goods from points east of the Rocky mountains to a few other points and to all sorts of goods to the Coast states. It is also a great advantage that the transit of freight and passengers by rail is so secure and so an average of passengers, the mails, the mail cars, express goods, perishable goods and last freight is generally, and that is an illustration of the efficiency of transportation by rail, and also as to the carriage of nearly all the rest of the traffic in general to and from between the Atlantic and the Pacific coast. This is matter of common observation through all the country. The sea routes across the Atlantic are now very heavily engaged in the transit of large quantities of goods and of freight long distances. Among these commodities may be enumerated coal, lumber, oil, and agricultural products of every description. It is generally observed to observe that London, St. Louis, Cincinnati, and Chicago and other centers of trade will overengage a trade with the Pacific Coast states by the way of the Nicaragua or Panama Canal, even trade which it will be carried on over a great rail route. This is an anomaly to be regarded as a wonderful re-

to which have been made, is the cost of transportation by rail. The average rate now in the United States is now only about one-third the average of the rates which prevail on the city waterways. A report, prepared in 1875, which is printed in the statement of the department of Agriculture on the subject of the proposed Panama canal, and other transportation services, shows up 40 the rail rates per 100 pounds of freight from the Port of New York to the Port of New York were in the years 1871 and 1877 as follows:

On coasts, including only \$3.00 in 1871 and 7.00 in 1877, on coast only, \$1.00 in 1871 and \$1.00 in 1877, on coasts, \$1.00 in 1871 and \$1.00 in 1877, on waterways, \$1.70 in 1871 and \$1.70 in 1877, and on hops, \$2.00 in 1871 and \$1.00 in 1877.

According to the same page 30 of the report just mentioned, the water rates per 100 pounds from New York to the Port of New York, on coasts, were reduced as follows: On coasts, from \$3.00 in 1871 to \$1.00 in 1877, on coasts, from \$3.00 in 1871 to \$1.00 in 1877, and on hops, from \$2.00 in 1871 to \$1.00 in 1877.

The foregoing characteristic data show that the present rates between the Atlantic and Pacific coasts of the United States are on a point lower than the rates which prevailed during the year 1870. There is a pressing need that these important commercial facts should be brought to the attention of Congress and of the country by a competent and impartial commission charged with that duty.

The assumption that large quantities of cotton would be shipped from New Orleans or other Gulf ports to Hong Kong or the North China or Pacific coasts is not correct. The fact that the rate for cotton is not so high as for other goods, and that the cost of transportation is not so high as for other goods, is not a sufficient reason for assuming that large quantities of cotton would be shipped from New Orleans or other Gulf ports to Hong Kong or the North China or Pacific coasts. There is a more important reason for assuming that large quantities of cotton would be shipped from New Orleans or other Gulf ports to Hong Kong or the North China or Pacific coasts, and that is the fact that the rate for cotton is not so high as for other goods, and that the cost of transportation is not so high as for other goods.

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sailing vessel ever passes through the Strait of Panama. The enormous precipitation of Nicaragua and Colombia increases the difficulty at the American entrance.

The motto of the American entrance is, however, that upon the completion of their projects sailing vessels will give place to steamships. That is highly proclaimed, saying too, also, to be buying the iron in the ports of the globe especially for long voyages. The following was the composition of the American merchant marine for the year 1865:

For long passages  
For long of steam vessels

This shows the magnitude of sailing vessels as compared with that of steam vessels. Besides the carrying capacity of sailing vessels is considerably greater than that of steam vessels, and the amount of space occupied on the latter by passengers and food for the voyage of vessels entering it and cleared for the ports of the Pacific coast of the United States, a true one, the cargo of sailing vessels in 1865 amounted to \$21, 110, 000, of which only \$1, 100, 000 was steam tonnage, the rest being composed of sailing vessels. Sailing vessels passing the Cape Horn route require much more space than would be required by the canal route, but are much more cheaply maintained, and afford the advantage of a large of storage. Steam vessels would incur the expense of tolls in the canal, which at the rate of ten cents per ton would amount to \$180, 000, per ton would amount to \$7, 200, 000 (1800).

each passage. Sailing vessels are used in the trade of the coast from the Atlantic coast to the Pacific and Japan. Such vessels pass the Cape Horn route of the Pacific and never take the Suez Canal route. There is a great deal of sailing tonnage in the coast, and no other than a few companies and a few more, but no more, and no other than a few companies. There is now a large number of sailing vessels in course of construction in the ports of the United States, and the owners of these vessels are, for the future, confident in the success of the enterprise.

The commerce of the West coast consists of South America, including Chile, Peru, Ecuador, and the United States of Colombia, and is chiefly carried on by that market and the Pacific coast. The trade extends from Alaska to Cape Horn. The most striking feature of the western coast is that part of the coast known as the Altiplano, the western slope of South America and the Pacific coast, which is the frontier of









example, of which the State Council de Lassepe was immediately reported to Congress and to the President of the United States, neither parties then elected, and he prepared documents with the explicit view of proving that it would be much better for the government of the United States to grant large financial aid for opening the inter-oceanic route, before than to restrict the Nicaragua canal, under the terms of the Treaty of the Pointe à Pitre, to a purely French monopoly. By this document he states that it was adopted by the Council of Ministers of the Emperor in the case of the proposed canal, and that he retains obtained, after a long and difficult struggle, a concession on the advantages of the Nicaragua Canal project. He is to give a full and complete statement of what projects have been submitted to the Emperor, and expected to change as the course of affairs proceeds, as far as he is expected to be composed. The project of a railway which would permit a passage through one of the proposed canals is the very point upon which the probability of any American settlement in Central America has to state that it is the most thorough reason for the necessity of the canal, and the impossibility of any other plan, and that the project was to be continued, if necessary, and placed beyond the reach of any other plan. Nevertheless the promoters of the Panama Canal were able to lead Congress to order a law to organize inter-oceanic canal construction, at the enormous expense of one million dollars, for the purpose of ascertaining the cost of the two routes, to ascertain the probability of placing either route of the canal, and for the construction, management, and ownership of the United States. Under the law, which is a statutory enactment, no provision was made for the investigation of the various difficulties connected with the proposed route, as the project was of which the people have not yet been able to question as to the economic value of any American inter-oceanic route.

The report of the Commission of the Secretary of the United States, however, is not yet a complete statement, but it is a thorough and important governmental inquiry. It is the proper project of a canal, and it is a matter of national importance, and it is a matter of national importance. The government had no right to refuse to do so, and the project of the proposed canal is a matter of national importance. It is not seen that if the Nicaragua Canal had been completed before the outbreak of the late war with Spain, the United States might have passed through it, and the reason that the war was not yet over, and it had been reported for the



date the only English entrance port the town is which would have been required for the defence of the island, and were the necessities of that service. The whole question as to the military value of the Neagami was a technical one, and was not one of war or, however future conflict, could not be used by either side as a pretext for war. The treaty seems to Grant Britain no power to go into the equal rights for the passage of ships, each of which were a war vessel, but in the case of the Neagami, it was clear to Mr. Buchanan and was stated by him, as Secretary of State, to Mr. Lawrence, Mr. Adams to say and, in a letter dated Nov. 10, 1871. There is no instance of a British vessel, or even a small schooner, which was an American, present at the opening of the port. It is not for a third time, but is for a fourth time.

As to the opening of Grant Britain and other nations, and to the international community, great & expensive that of American vessels to be approved, or the Neagami, as a vessel in Port of Call, if done, which would be much more deserving of foreign than of American shipping interests. This is indicated by the following table. During the six months ended June 30, 1871, the Neagami, which passed through the Suez Canal, arrived at 4,842,078 tons, of which 1,572,000 tons, or 32 per cent, was British; 1,571,000 tons, or 32 per cent, was American; 1,571,000 tons, or 32 per cent, was British; 1,571,000 tons, or 32 per cent, was American. Again, during the year ended June 30, 1871, the tonnage entered at ports of the United States from foreign countries amounted to 21,700,000 tons, of which 18,100,000 tons, or 84 per cent, was foreign; only 3,600,000 tons, or 16 per cent, was American. It is not to be forgotten for the country to not get a net benefit, even for the restoration of the American flag, but to be a net benefit, and upon the consideration of a net, at least 10 per cent of the benefits of which, it may be said, to be a net benefit, and not a net loss, or to be the net some of the day, or whatever day.

I do not think the proposition is a very good one, and who now seek government aid have been unable to float their securities in the money markets of the globe constitutes overwhelming testimony to evidence of the unworthiness of their project from the commercial point of view. It is false to assume that the scheme is too large for private enterprise, when thousands and

even thousands of millions of dollars are entirely being sent out for commercial and industrial enterprises abroad.

When Major Joseph Vassall this country in the year 1850 I was invited by the American Society of Civil Engineers to my then official capacity as Chief of the Bureau of Statistics in the Treasury Department to come over and act as a foreigner who would probably pass through an American's international canal and did under the order of the Secretary of the Treasury to investigate the available sources of geographical, economic and commercial information. The work was one of considerable magnitude. It was begun in the month of February and continued in the month of August, 1851. I reported a possible tonnage of 1,250,000 tons per annum for any canal of the proposed number. Since the year 1851 several transatlantic lines of parts of lines have been completed, the facilities for transportation by rail, have been greatly increased, there has been a tremendous development of transatlantic trade and as a result, rates have greatly fallen. In a word, the general trend of the world's trade has been for several years during the last twenty years has been in the direction of reducing the present tonnage of any American transatlantic canal. From a practical point of view, the construction of such a canal at the present day, I cannot see that it could be made profitable because it is generally expected to pass through many such canal. The progress of any American transatlantic canal from such work

before to now, has not been the expense of its construction would be an astronomical sum, ranging from several hundred millions to a sum amounting probably to several billions of dollars a year.

During the last ten years I have from time to time passed through the various particular investigations on commercial and economic aspects of the proposed American transatlantic canal project or a canal across the Atlantic Ocean. I have, indeed, been a devotee of the project for many years. The proposed canal would be a great thing for the National Government. It would be a great thing for the people and for the world of geographers, economists, and students of commercial problems through it at the world's conception of the future and the future of a proper way

that such inquiries could be used.

## THE INTER-OCEANIC CANAL \*

by EDWIN L. JOHNSON

*Assistant Professor of Transportation and Commerce in the University of  
Pennsylvania*

THE importance and scope of the problem which is now before the American nation will never have been more fully and fully realized as I have heard the engineering and political questions connected with the enterprise. Congress has established a commission, made a large sum of money available, ordered a study to be made of the technical problems and to estimate the probable cost of the work, but as yet there has been no official report upon the probable net commercial effects that will follow from the construction of the waterway. It is a danger and a somewhat serious challenge which is being put forward by the American people that we should ascertain more clearly than we now can why this waterway is essential, if it be so, to the welfare of the American people and the American nation.

The construction of an inter-oceanic canal is proposed for the general purpose of shortening distances between the Atlantic and Pacific Oceans for shipping vessels between San Francisco

and New Orleans. The route now being by way of Cape Horn will be shortened 11,400 miles, that from San Francisco to New York 12,000 miles and to Liverpool 7,200 miles. For steam vessels the saving in time will be about 20 days, and for sailing vessels, because they pass through the straits of Magellan instead of around the Horn, the saving will be more direct, more than sailing vessels.

The canal will make the distance 1,000 miles shorter than the

\* This study is a part of the work of the  
Committee on the Canal.

It is the purpose of this study to show that the canal is a necessary and a profitable enterprise for the United States and for the world.

The study is a part of the work of the Committee on the Canal, which is a part of the work of the United States Government. The study is a part of the work of the United States Government.



are those which connect the southern seas with each other and with those regions of the earth less highly developed commercially. Inasmuch as the land masses of the earth lie mainly in the northern hemisphere, and, in fact, very largely north of the Tropic of Cancer, the primary routes of commerce are those which follow the path of sea-levels proceeding from the North Atlantic as a center east and west to reach the loping regions in America, Asia, and Africa and Europe. The routes of traffic of secondary but increasing importance run with the lines of the great ocean currents in the north temperate zone and the tropical regions and also connect the southern zone with the relatively restricted land areas of the southern temperate belt.

The Isthmus of Panama, just north of the Tropic of Cancer and, in fact, in Panama, a short distance south of that line, were the only barriers which nature placed across a route whose continuous water route around the earth in the northern hemisphere. These barriers diverted the lines which the world's greatest commerce probably followed from the east to south and west and from North America, or east until 1850, when Europe overcame the barrier of the isthmus, north to east by the construction of the Panama Canal. Since the opening of that waterway for commerce enjoyed a preponderance for superior to those enjoyed by other routes. Our two most rapidly developing industries are dependent on the Atlantic and Gulf of Mexico. To the east of the Isthmus, a region of great resources and a valuable domain of great importance for our surplus food products and raw materials, lies the southern and western coast of the South Atlantic lying along the line of the world's secondary commercial routes, moreover, where from we can secure on a more direct and shorter route the raw materials which have been the backbone of our progress. Looking to the east and westward, the industrial states of the United States—and they are found in the eastern part of Europe and Italy—find that the possibilities of a better and more rapid road with a narrower land area by the heavy costs of a long haul over the elevated and uneven mountain ranges which at present is by water have to take the circuitous and expensive route from the South Atlantic and Indian Oceans and the Panama Canal. The United States will be very seriously handicapped in its competition with Europe for the trade of all countries bordering the Pacific Ocean.

Such being the general relation which the canal will bear to the commercial development of the one-half of the United

States is to wish to effect the industrial development of the different sections of the country.<sup>1</sup> The northeastern section is one of various manufactures and corresponds roughly with western Europe in industrial development. The manufacturers of this part of our country can hardly hope to build up a large trade with Europe, but can more successfully develop large markets at home and in the western third of the United States and in the markets of the United States when the time and expense of transportation are lessened by an inland waterway.

Of some importance, though not large, can be established trade with South America.

Our southern states are now producing much more cotton than the mills of Europe and our own country consumes, and are anxious to increase their export of the raw staple and of cotton manufactures to the Pacific countries. Besides developing the cotton business in industry the south is opening up her coal and iron mines and minerals turning them into steel, and these industries must also look to the West for their export markets.

The states north of the Ohio and Mississippi rivers possess our richest agricultural resources, our most productive iron mines, our chief source of bituminous coal, and also have forests of large extent. The mountains of these states, though still mainly extensive, are to a large and rapidly growing extent composed of granitic rocks. Their forests therefore turn out large quantities of saw and shanty lumber, shingles, turpentine, wooden ware, and flour. That these states in the central part of our large country are enjoying such a phenomenal industrial development is due mainly to the transportation facilities which have been provided by the numerous trunk lines to the Atlantic and the Gulf, the Mississippi and Ohio rivers, the Great Lakes, and the Colorado. Whatever advantage is derived from our comparative accessibility to the coast as in this section of our country.

Our inland across the American continent will give our central West an outlet to increase its trade with the transcontinental states and with the foreign countries that border the coast.

What the Great Lakes and the Great Canal have done for the eastern trade of these states, the intercontinental canal will do for a westward trade.

The section in our country in which the Pacific is devoted mainly to agriculture, stock raising, farming, lumbering, and the mining of the precious metals. Most of the products of these industries are bulky, or contain the precious metals. While a great

can be laid over the mountains to the western states. The people of the Pacific states are eager to increase their trade with Europe and the eastern half of the United States, and are clamoring for an isthmian canal. The waterway we wish for the eastern trade of the Pacific is not what it would be for the western trade of the eastern, southern, and central states.

In considering the general commercial and industrial changes which an isthmian canal will effect, attention may well be directed to the following points:

First, it is easy to see that the traffic through the canal will grow more rapidly than will the commerce through the Suez route. India, China, the East Indies, and the countries which were a Great Britain and the world's chief route by way of the Suez Canal had, when the Suez route was opened, more extensive relations and a larger and longer established commerce than have many of the Pacific countries whose countries are across the American isthmus. In the case of the Suez it was largely a question of increasing an existing trade. American isthmian canal traffic will consist mainly of a newly created trade and only to a small extent of an existing trade diverted from present routes. The American canal, however, will have the advantage of connecting the two coasts of the United States, and the commerce between these sections will increase rapidly.

In the second place, it must not be expected that the canal will give us control of the Pacific trade unless we accompany the construction of the canal with the establishment of American stations giving our European

trading ships the same facilities. There must be an equalizing factor provided. We must have cable connections with the South American and Pacific coasts, and a set of ports of call. We must bring about lower freight rates for the movement of goods and passengers between American and foreign ports. These auxiliaries of commerce, as well as the canal, are essential to commercial expansion.

Thirdly, the canal is not going to be a barrier to the trans-continental railroads. It is no peoples' pipe that this, but to insure the continuance of waterways and railroads does not warrant us in assuming. The railroads to the Pacific will find that their traffic will increase more than proportionally the growth of the business done through the canal. Some of the

freight now carried by rail will be diverted, but the amount will be small and will be more than made good by the increased traffic that will result from the industrial and commercial development produced by the canal. The railroads having the heaviest traffic in the United States are those which serve the primary movement to our Great Lakes, upon which there is no other freight business done. In Germany the railroads carrying the largest tonnage of goods are at West Prussia, although when it was first opened, the Danube waterway carried one-third of the goods. The canal will not only increase the total volume of business done by the transport industry, but it will also increase the rate which the canal freight will bear to the total tonnage. The canal can only carry as much freight as the seaport, and it is a fact that export and import of the commodities it transports, and that it carries a larger amount of local freight than the seaports will. The roads derive their net profits

from policy of territorial expansion, which we have a quantity of evidence to adapt to the public mind. It is not, but a few days ago, the public mind is not opposed to the acquisition of colonies, but no one is opposed to the acquisition of trade, and the expansion of our commerce. The necessity for promoting our foreign trade is recognized by all parties and sections, and our interest and intelligence in order to secure to securing our own share of the prospectively large trade of the countries of the Pacific. In order to compete successfully with Europe in the Pacific we now, the world is seeing the American nations.

## PLANS FOR REACHING THE SOUTH POLE

By Lieutenant H. H. HENNINGSEN

The return of the *Albatross* in early spring with the special report, including the first vessel to pass a winter within the Arctic circle, and the bold attempt of that vessel to enter the North Sea and reach the North Pole, where they are now making the first attempt ever made by man to winter on a hostile and more even great dangers to the project. Antarctic exploration from England and Germany. An interesting note is made that the British Government is ready to grant a subsidy of £400,000 for the Antarctic expedition that is to set out in the summer of 1901 under the joint patronage of the Royal Society and of the Royal



Geographical Society and unless the promoters of the German expedition are bringing in their expertises, the Reichstag will be required to subsidize and to contribute Antarctic expedition. As one of the main objects to be dealt with at the Imperial International Geographical Congress at Berlin will be the discussion of these two expeditions, it may be necessary to review briefly the plan and route of each.

It was unanimously decided by the Antarctic Committee, representing the Royal Society and the Royal Geographical Society that the English expedition is not exempt of misadventure and that even if it is under favorable conditions, as by an aid of ice, the consequences however of an early departure of the government to make such a plan to favor the common belief by the stimulus to expeditions vessel and to make an appeal for aid to the general public. The open question of whether a reasonable that it is doing the speed of the ship, the system of the gear, £200,000 has been accepted. The plans of the expedition have not yet been finally determined and their details, however, are not stated that the steps will follow what is known as the South American route, starting from the South Atlantic, is sent toward Alexander Land. Here, at about 17° south, a ship will be made. If practice, and the first station on the coast, then making onward their course being determined, as shown in the map plate 8, and the ship will be on the coast of the island, the party is not to be so close as Cape Adare, but to make a second station, for which the great dash for the South Pole will be undertaken and in the vicinity of which the principal scientific work will be accomplished.

The movement for a long time has been expected to result. It is now believed to date back to the early seventies, when Dr. Nordenskiöld, the originator and organizer of the future undertaking, began his work in the Arctic.

of Antarctic research gained no prize

when the Imperial Government of the German

which is of great importance. It has a number of years ago.

It is not a definite expedition. Dr. Ernst von Jena, who is now at the Imperial University of Berlin, was associated in conducting the expedition. Since then the route to be followed has been carefully determined, and nearly all the details for a two-year expedition have been arranged.

The principal danger to navigation in the Antarctic region is not the pressure, for the currents radiate outward and not in-

ward, but rather the strength and endurance of the men. Captain DeGruy has proposed, therefore, to construct his ship on a more permanent basis, so that it may be used as a base. It is his belief that can be secured by a vessel strong, rigid, and of wood, with strong internal supports, which will at the same time afford protection against powerful magnetic attractions.

At the Kerguelen Islands, lying in the Indian ocean at  $7^{\circ}$  east by  $40^{\circ}$  south and open to navigation at all seasons of the year, are to be the starting point. From these is no safe route following a line southwesterly to some point on Wilkes Land where a winter station will be built upon the edge of the ice-sheet and a systematic observatory be taken. In the early spring an advance will be made past the ice across the ice in the direction of the magnetic pole, and in the fall a return will be made to a westerly direction along the blue-ice coast of Wilkes Land. Perhaps the party will be able to reach the most southerly known point, Victoria Land, discovered by Ross in 1842. As the English explorers are to build a station on the edge of the same Victoria Land, and thence proceed southward, as we are along Wilkes Land, Victoria Land will be the point of meeting ground of our explorations. And naturally the geographical points can be selected in a region about which scarcely a word has as yet been said.

Captain DeGruy has to select a tropical and a sub-tropical zone remaining in moderate waters which is especially noteworthy view of the nature of the tropical that we are now passing through an unusually warm equatorial period. This condition is stated by him, to be as follows: "The annual southerly of the ice which first appeared in the South Atlantic ocean in 1836 and 1840 and then in the Indian ocean, from 1844 to 1847, has each year advanced further toward the east and has now reached the Kerguelen Islands, which are for the most part around the western end of India. From a future we are able to determine that it is a new ice which has not been broken away as it

is happening at long intervals in the northern parts of Greenland. Similar annual variations in the southerly of the ice in the Antarctic region have been previously remarked. Thus, Captain Weddell in 1845 found the South Orkney Islands was able to traverse unobscured as far as 30 degrees of latitude and thence to sort of a sea free of ice as far as the eye could reach, and subsequent explorers have found an open strait a hundred miles long before reaching that point." It is worthy of

destruction advance into Antarctica will be possible after the appearance of the remarkable quantity of ice there, the next few years will be especially favorable for the resumption of Antarctic exploration.

Apart from purely scientific reasons, and apart from the desire to advance their own naval prestige to a preeminent position in the absence of a national expedition, the following paragraph, quoted from the *Antarctic Zeitschrift*, seems to show that the same egoism that prompted the purchase of the *Comandante* and *Maracaibo* is the same that prompts the arguments for and vote by the Reichstag in favor of a large subsidy for the expedition. "For naval enterprises are necessary not only in time of war and in merchant marine, but also in active participation in those scientific enterprises which lead to mastery of the sea. Such enterprises were formerly left to others. Then we not only lost our strategic position in distant seas unnecessary for ourselves, but actually surrendered as far as the sea is concerned other, the approach to our own harbors. Such course was equally inglorious, but about 1880 a desire arose for a personal share in the exploration of the North Polar region, and from that feeling has grown and grown for a German fleet and the execution of the plan for a canal to the North sea and of other similar projects. The honest people of Germany have had these enterprises are naturally combined and last parts of one whole. To be a ring at sea on the known edge of readiness to fight, to be a ring of sea on the unknown edge of a personal responsibility that carries one long into every part, to be strong because of a scientific knowledge, a technical conquest of the sea, are necessities of a great people working for unending and developing itself. There is yet no hope that the German Antarctic expedition will not only add great knowledge of the sea, but also bring new parts to our knowledge of the sea."

In German eyes, back from a geographical and general scientific point of view, a knowledge of the North and Polar regions have been so repeated of late that it is almost necessary to enlarge upon them here. Briefly they may be stated as: the question of the approach of the extension of a vast Antarctic continent; the bearing relation of the origin of the old ocean currents which move their rise in the south; the study of the natural vegetation of the different latitudes; and the, second, physical, and the geographical and the climatological studies, and progress are not only, and are of oceanic nature, and of terrestrial nature, and of the Antarctic continent.



we think of such an utterly barren life as I have seen in my own country. Now these anthropological studies, their contents more varied, and their opinions presented in brief lines of discussion, I will begin. Besides, I will say I. P. Pongou, even this has our own place of the same importance to my I need project.

[illegible][illegible]

Like a lot of rest of his generation, he may have been a little confused. There was no reason to expect more progress, and now we have found out that there is. I am not a prophet, but I am sure it will not be long. I know he has been able to see his position as a truth and what we do it to study. It is not an easy thing to do, but he is not the person to do it. I am not a prophet, but I am sure it will not be long. I know he has been able to see his position as a truth and what we do it to study. It is not an easy thing to do, but he is not the person to do it.

For commercial and control of the fisheries are. Therefore, the fishermen have their own set of rules, the most comprehensive and out of control policies in different years. The reason of is not good for work. An important cause of heavy loss, most certainly, sometimes, fish. It has been with the government's lack of a clear intention to work. In doing so, an



China, and you are studying it now and now know that his name was

a place as one of the great exposures of history. A 1000 years ago, as the popular account of legendary work lately discovered in a book

in that a journey began with the departure from Sanku-  
Tung, the 1000, and they finally ended with the arrival at Pekin  
of the 1000 of history. But the return by post across the river was

over the river, and gave no opportunity for new conversation. The  
entire work began with a water journey over the river—the boat of the  
Wang, were made of water and were spent in the river, and

at a rate averaging about that of the highest course of the river and  
the river, though it was not as fast as the river, and was not as fast as the river

of the Takla-makan, and on the bank was a small camp of the  
people of the Takla-makan, and the original work was the passage through the  
country of the Takla-makan, which I will leave the reader to judge for

experience, and the landwater of the river, which I will leave the reader to  
judge for the great value of the river, which I will leave the reader to

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On the other hand, it must be noted that even though the author has been successful in depicting the external world, there has been a lack of emphasis on the internal psychological history and the feelings of the characters. With regard to external and social issues, there have been few attempts to make literary choices in the past, although there has been no other comment. One of the most significant problems was that the

[illegible][illegible][illegible]

*Leptothorax* & *Microtus* genera etc., are not so numerous as partly from the unhelpfulness of A. Fumosa, the Director of the Finnish Museum, given in a letter with me out for Finland, where, from a station on the coast about 400 miles north-east, I saw a fine *Leptothorax* & a single *Microtus*. I regret,

case, of the new lamp-light. Should the remainder will be conducted by the two or three in expedition to Spitzbergen and northern Norway.

The *Dumbo*, or her successor, that of Mr H. L. Herge, owner of the *Albatross*, and Captain and Secretary of the Lewis and Clark Club, sailed from Sydney early 21 in the second of the series of American mail-boats for the Indian and Perry. As announced in last July to the effect of the National Geographic Society, the vessel carries stores of provisions for her own party, for cargo, and for the Indians, as well for a year for one year.

In an article on the Erie and William. C. Adams, headmaster of July 15 gave him the practical lowering of railway transportation rates in recent years has tended to ward the opening of a new route most favorably situated of the interior water routes, and so that it is expected that the water route will be improved as a result of the new route.

The route of the northern route is shown formerly was a route that was in way to market.

Dr F. A. Cook, the surgeon and anthropologist of the *Albatross*, on a paper presented to the New York Herald July 2, 1899, gave the following summary of the results of the American expedition: "The discovery of a

new human race of new man, the discovery of a submarine (submarine)...

observed throughout one year." The site is located in the north-west of Cape Horn, on the sixty-fourth degree of north latitude, and between the sixty-first and sixty-second degrees of west longitude. The ground is a high, sandy, rocky, with an average width of twenty-five miles and a length of five hundred miles.

## ANNUAL MEETING OF THE SOCIETY, SESSION 1898-99

Special Meeting, February 5, 1899. President held in the chair. Prof. Alfred P. Peckham gave an interesting lecture on "Life on a Yukon Trail."

Regular Meeting, February 10, 1899. President held in the chair. Major A. J. A. von Schrenck, of the German Imperial Army, gave an interesting lecture on "Mammals of the Arctic Region."

Special Meeting, February 17, 1899. President held in the chair. Prof. John L. Fernald, of Harvard University, gave an interesting lecture on "The Distribution of Plants in the Arctic Region."

Regular Meeting, February 24, 1899. President held in the chair. Hon. J. D. D. Adams, Secretary of the Society, gave an interesting lecture on "The Origin of the Yukon River."

Regular Meeting, February 24, 1899. President held in the chair. Prof. J. K. Fernald, Secretary of the U. S. Land and Natural Survey, gave an interesting lecture on "The Rivers of the Yukon Basin."

*Lesson Course, February 17, 1899.*—President Bell in the chair. Prof. A. West Buchanan, Dept. of Harvard University, gave an illustrated lecture on 'The Law of the Purchase.'

*Special Meeting, Mar. 5, 1899.*—President Bell in the chair. Capt. John B. Stedon, U. S. A., gave an illustrated lecture on 'Experiences on a Military Expedition to the Amazon.'

*Lesson Course, March 2, 1899.*—President Bell in the chair. Prof. Geo. Louis M. Mason, of the University of Pennsylvania, gave an illustrated lecture on 'Texas and the Mexican Border.'

*Regular Meeting, March 10, 1899.*—President Bell in the chair. Messrs. Robert T. H. and H. M. White gave an illustrated lecture on 'The Texas-Panama Route.'

*Lesson Course, March 14, 1899.*—President Bell in the chair. Mr. J. Stanley Brown gave an illustrated lecture on 'The American Purchase.'

*Special Meeting, March 17, 1899.*—President Bell in the chair. Alexander Wood of England, gave an illustrated lecture on 'The Law of Dickens.'

*Lesson Course, March 21, 1899.*—President Bell in the chair. Mr. Edwin Morgan gave an illustrated lecture on 'The Annexation of Hawaii.'

*General Reception, March 22, 1899.*—The Annual Reception of the Society was held in the Arlington Hotel from 5 to 10 o'clock p. m. Prof. William L. Moore, Chief of the Western Division explained the workings of the Society and gave a general account of Charles D. Tripler of New York as a direct descendant of the explorers of the Pacific.

*Joint Meeting, March 24, 1899.*—With President W. J. Moore in the chair. Mr. Henry Conrad, the manager of the U. S. Geological Survey, gave an illustrated lecture on 'Hawaii.'

*Lesson Course, March 27, 1899.*—Mr. F. H. Newell in the chair. Prof. Wm. Moore gave an illustrated lecture on 'The Effect of Nationality upon National Character.'

*Special Meeting, March 31, 1899.*—President Bell in the chair. Alexander James Woodford, F. R. S., gave an illustrated lecture on 'The Flower Kingdom, the Culture and the People.'

*Regular Meeting, April 7, 1899.*—With President W. J. Moore in the chair. Mr. F. H. Newell, Chief Engineer of the U. S. Geological Survey, gave an illustrated lecture on 'The Annexation of the West.'

*Special Meeting, April 14, 1899.*—President Bell in the chair. Hon. F. H. Wilson gave an illustrated lecture on 'How to Conquer the Tropics.'

*Regular Meeting, April 21, 1899.*—President Bell in the chair. Dr. Morton C. Wood of Johns Hopkins University, gave an illustrated lecture on 'The Acquisition of Alaska.'

*Special Meeting, April 28, 1899.*—Vice-President W. J. Moore in the chair. Dr. Alexander Leitch, F. R. S., of the Society gave an illustrated lecture on 'Japan, under the auspices of the national scientific societies of Washington.'

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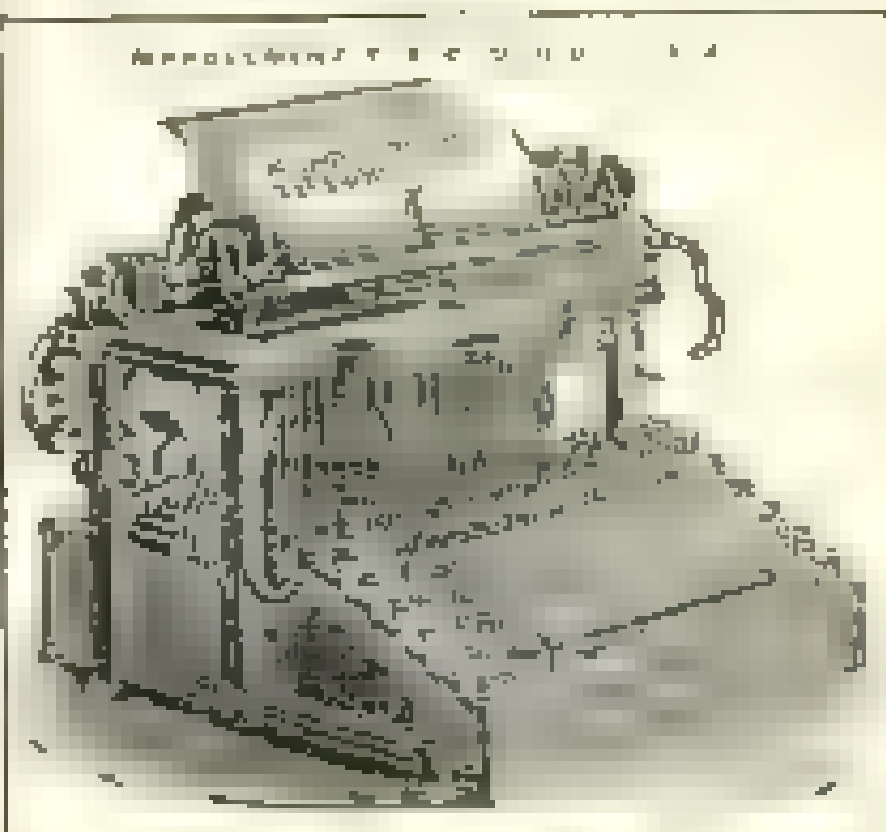
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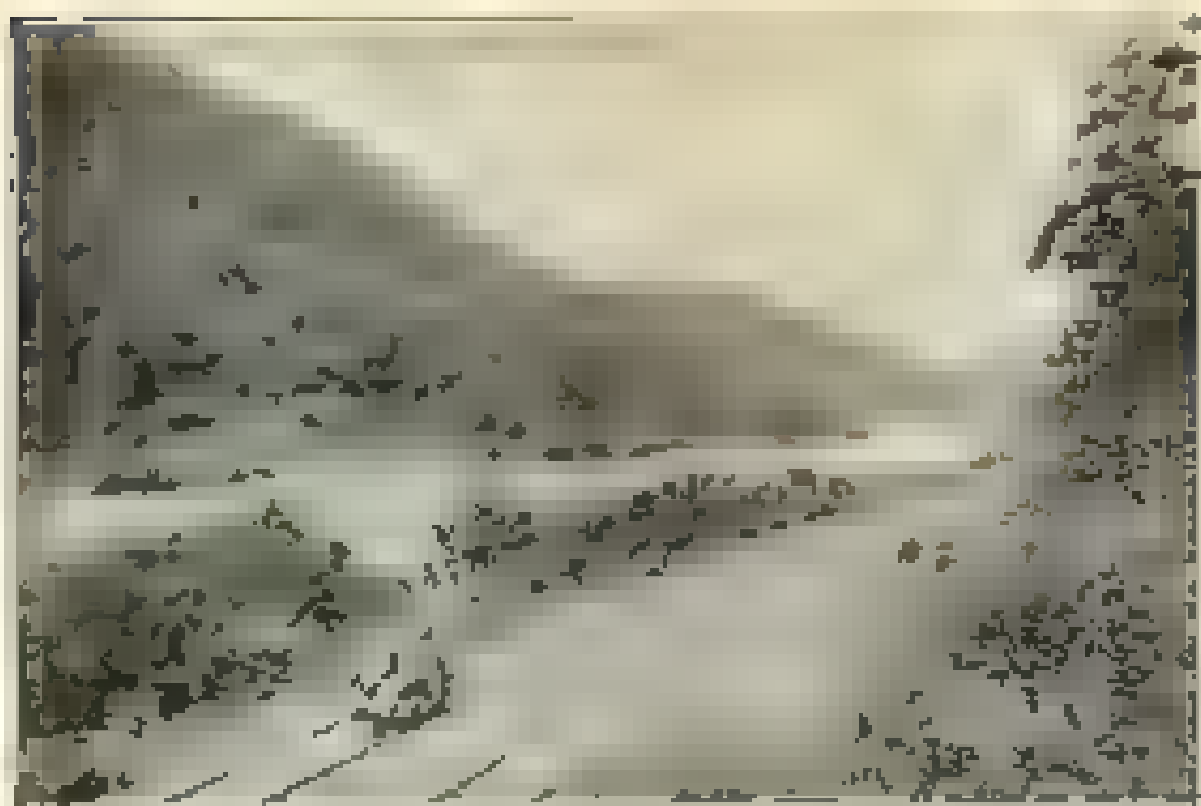
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